REMARKS

1. **Summary of the Office Action**

Claims 25 and 33 stand rejected under § 102(e) as allegedly being anticipated by U.S. patent no. 5,050,474 ("Ogawa"). Claims 26 – 32, 34, 35 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Ogawa in view of U.S. patent no. 4,667,556 ("Hanzawa").

2. **Response to § 102 Rejection**

Applicant respectfully traverses this rejection for the reasons set out below, and ask the Examiner for reconsideration.

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

In Ogawa an analog signal synthesizing system is described comprising "a **waveform memory 10 which stores a plurality of voice signals (analog signals) as PCM data** which are sampled with different sampling frequencies. **PCM data corresponding to plural channels are read out from the waveform memory 10** and used to produce an output synthesized analog voice signal 100R for a right-hand speaker and an output synthesized analog voice signal 100L for a left-hand speaker. To this end, the system also comprises a work memory 20, a CPU 22 and a multi-channel programmable sound synthesizer 24." (See Ogawa col. 5, lines 4 to 15 and Figure 3).

Figures 1A and 1B show details of the sound synthesizer 24. Clearly the PCM data is received from the waveform memory 10 (WAVEFORM MEMORY (12-BIT-DATA)) which is then processed by the oversampler circuit 32 to provide a 16-bit output from the adder 44. The work memory 20 is connected to the **control circuit 30** that "**outputs** frequency data 120 representing the musical interval of the read PCM data toward the oversampling circuit 32 while

outputting volume data 130R and 130L indicating the right- and left-hand volumes toward multipliers 46R and 46L, respectively." (See col. 6, lines 4 to 9).

The functionality of the work memory 20 is described at col. 5, lines 16 to 36:

> "The work memory 20 is provided with channel areas 0-23 addressed by addresses 0-17FH and interrupt areas addressed by addresses 1F8H-1FFH, as shown in FIG. 4A. The channel areas are so arranged as shown in FIG. 4B while the interrupt areas are so formed as shown in FIG. 4C.
>
> The magnitudes of left- and right-hand sounds in each of the channels are written in L-volume areas and R-volume areas for that channel as shown in FIG. 4B, respectively. Data representative of the musical interval of a voice outputted through that channel are written in the frequency area thereof. Such flags as shown in FIGS. 5 and 6 are written in the flag area. At the start and end addresses, read-start and read-end addresses for the waveform memory 10 are respectively written in the work memory 20. These read-start and read-end addresses are used to address PCM data to be read out from the waveform memory 10 through the corresponding channel. The repeat address includes a repeat-start address written therein for repeatedly reading the addressed PCM data."

Clearly in Ogawa, as can be seen from Figure 1, **PCM data is read from the waveform memory 10**, synthesized by the multi-channel programmable sound synthesizer 24, and then output as serial data to subsequently provide left and right output signals 100L and 100R.

Claim 25 of the present application relates to a "digital sampling instrument for the multichannel interpolative playback of digital waveform data samples stored in a waveform memory, the digital sampling instrument comprising:

a **cache memory** storing at least N waveform memory samples for each channel;

control logic to access said waveform memory samples from said **cache memory**; and

an **interpolator** configured to perform Nth order interpolation on said waveform memory samples to form an interpolation result."

It is submitted that Ogawa does not describe or even suggest any element that can be considered a **cache** memory as claimed in claim 25. It is clearly evident from the disclosure in Ogawa that **work memory 20 never stores waveform data samples or waveform memory samples for each channel**. Accordingly, the claim limitations of "digital waveform data samples stored in a waveform memory" and "a **cache memory** storing at least N waveform memory samples for each channel" are not described or even suggested by the work memory 20 in Ogawa. This is clearly evident from column 5, lines 16-36 (see above), and Figures 4A and 4B, which describe the contents of the work memory 20. It will be clearly seen that **nowhere does the working memory 20 store any waveform data samples or samples obtained from the waveform memory**. Ogawa contains only one memory capable of storing data samples, and that memory is Ogawa's waveform memory 10 which stores a plurality of voice signals (analog signals) as PCM data. Figure 1A and the its associated description (see above) clearly show that the "**PCM data corresponding to plural channels are read out from the waveform memory 10.**" (See col. 5, lines 7 to 10).

That Ogawa fails to describe or even suggest use of cache memory is also shown at column 5 lines 62-66, which clearly show that the waveform data samples (PCM data) are read directly from the waveform memory 10 and applied to oversampling circuit 32. This is also clearly illustrated in Figure 1A in which "WAVEFORM MEMORY (12-BIT DATA)" is directly applied to latch 34 and subtracter 36 in oversampling circuit 32. In neither case does Ogawa indicate in any way that the waveform memory samples are stored in any **cache memory**, nor does any memory for waveform data samples other than the waveform memory appear in any figure.

In view of the above it is submitted that Ogawa does not disclose or even suggest the limitation of claim 25 of "a **cache memory** storing at least N waveform memory samples for each channel." Accordingly, it is submitted that claim 25 is allowable and, as claims 26 to 32 are dependent upon claim 25, they are also allowable.

Claim 33 relates to a "method for implementing an interpolator for the multichannel interpolative playback of digital waveform data samples stored in a waveform memory, the method comprising:

accessing said waveform memory samples from said waveform memory;

storing at least N waveform memory data samples for each channel in a cache memory; and

performing Nth order interpolation on said waveform memory samples to form an interpolation result."

In view of the discussion above, it is submitted that Ogawa does not describe or even suggest the limitation of "**storing at least N waveform memory data samples for each channel in a cache memory.**" Accordingly, it is submitted that claim 33 is allowable and, as claims 34 and 35 are dependent upon claim 33, they are also allowable.

In light of the above, the Applicant respectfully submits that the rejection under 35 U.S.C. § 102 has been also been overcome, and withdrawal of this rejection is therefore respectfully requested. Further as claims 25 and 33 are allowable, dependent claims 26 to 32, 34 and 35, respectively, are also allowable and thus the rejection under 35 U.S.C. 103(a) is also overcome.

3. Conclusion

Having tendered the above remarks, the Applicant respectfully submits that all rejections have been addressed and that claims 25 to 35 are now in a condition for allowance, which is earnestly solicited.

It should furthermore be noted that the above amendments have not been made for reasons of patentability but have been made with a view to modifying the form of the claims.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of the present application, the Examiner is invited to contact André Marais at (408) 947-8200 ext. 204.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 12/05/, 2003

André L. Marais
Reg. No. 48,095

12400 Wilshire Blvd.
Seventh Floor
Los Angeles, CA 90025-1026
(408) 947-8200